

A new *Solen* from the caribbean coast of Colombia, South America (Bivalvia, Solenidae)

by Rudo VON COSEL

Abstract. — *Solen tairona* n. sp. from the caribbean coast of Colombia (South America) is described and compared with the known Western Atlantic species. It forms a species group together with the most closely related *S. viridis* Say (southeastern U. S. coast and northern Gulf of Mexico) and *S. rosaceus* Carpenter (southern California to Mexico), but it is distinguished by size, shape and colour. It belongs to the subgenus *Ensisolen* Habe, of which most living species are found in the Western Hemisphere.

Résumé. — *Solen tairona* n. sp. de la côte caraïbe de Colombie (Amérique du Sud) est décrite et comparée avec les espèces connues de l'Atlantique occidentale. Elle forme un groupe d'espèces avec les espèces les plus proches *S. viridis* Say (côte sud-est des États-Unis et nord du Golfe de Mexique) et *S. rosaceus* Carpenter (Californie du Sud jusqu'au Mexique), mais elle s'en distingue par sa taille, sa forme et sa couleur. Elle appartient au sous-genre *Ensisolen* Habe, dont la plupart des espèces vivent dans l'hémisphère occidental.

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The genus *Solen* Linné, 1758, comprises soft bottom infaunal marine bivalves, which, in adaptation to their method of burrowing, have developed long and slender shells with anteriorly terminal beaks. The genus is mainly tropical and subtropical, with its centre of distribution in the Indopacific. Because of their fragile shells and the difficulties in collecting them in their special biotopes, the solens have been little studied. From the Western Atlantic, five species have been described to date. These will be dealt with in detail in a survey of all American species of *Solen*, which is in preparation. Among the marine molluscan material from the caribbean coast of Colombia collected or examined by the author there are at least three species of *Solen*, which cannot be identified with the known Western Atlantic species. Sufficient material of one of these makes it possible to describe it here as new.

Abbreviations

- AMNH : The American Museum of Natural History, New York.
IRSNB : Institut royal des Sciences Naturelles de Bruxelles, Brussels.
LACM : Los Angeles County Museum of Natural History, Los Angeles.
MNHN : Muséum national d'Histoire naturelle, Paris.
USNM : United States National Museum, Smithsonian Institution, Washington.

Solen tairona n. sp.

MATERIAL EXAMINED : Holotype MNHN Paris, 24,8 × 5,8 mm (largest shell), Cartagena-Crespo, on beach, fresh shell, tooth of left valve partly broken (one valve broken into 2 pieces). Paratypes MNHN Paris, 20,4 × 4,0 mm, same locality, one left valve with intact hinge tooth; 14,8 × 2,8 mm, Cartagena-Crespo, 2-3 m, live-collected specimen with animal. Paratype LACM Los Angeles, 19,2 × 3,6 mm, Cartagena-Crespo, on beach, a right valve. 12 juvenile live-collected specimens, same locality and some, mostly broken, valves from the beach, for the moment remaining in the author's collection.

DIAGNOSIS : A small, elongated, rosy-coloured, thin-shelled, translucent and extremely fragile *Solen* with markedly rounded anterior end, tapering posterior half and truncated posterior end.

DESCRIPTION

Shell small (15-25 mm), elongated, ratio of length to width 5,2 : 1 (holotype) to 5 : 1, very thin, translucent and extremely fragile. Dorsal margin nearly straight or very faintly concave, ventral margin distinctly convex. Hinge and ligamental area slightly bent dorsally. Anterior end pronouncedly rounded and prominent, often nearly semicircular. Posterior half of the valves tapering, posterior end nearly vertically truncate, with rounded corners. Ligament length 1 : 7,2 — 1 : 7,5 of the total shell length. Surface glossy, with irregular growth lines. Periostracum very thin, pale yellowish brown and translucent.

Anterior adductor scar fairly long and narrow, somewhat variable, about 1/4 to 1/5 longer than the ligament, posterior adductor scar united with the dorsoposterior part of the pallial sinus, its anterior margin anterior to the short oblique scar forming the inner part of the pallial sinus. Ventral pallial line below the anterior adductor scar more close to the dorsal than to the ventral margin of the shell, but towards the posterior end becoming more close to the ventral shell margin. Distance between the innermost point of the pallial sinus and the posterior margin 1 : 4,2 — 1 : 4,5 relative to the total shell length. Inner anterior margin of the valves thickened and on the outside a very shallow, broad, vertical depression below the umbones, which becomes obsolete towards the ventral margin. Hinge with one cardinal tooth in each valve.

Colour of the shell light brownish rose with a deep pink flush on a horizontal thickening just dorsal to the anterior adductor scar. Vertical thickening of the inner anterior margin more brown and always well distinguishable.

Animal generally whitish, with cylindrical foot and siphons with transverse constrictions. Mantle margins ventrally and posteriorly with a deep violet lilac rim. Foot white, with very fine reddish-violet pattern, which resembles the contours of the spots of a giraffe. This pattern is only visible under the lens and appearing a pale lilac-rose to the unaided eye. Tip of the foot pure white. The pedal aperture with the same colour as the foot, but with the pattern a bit more dense. Siphons very faintly violet, with narrow, dark, violet transverse bands central between the constrictions, which themselves are whitish. All observations were made on live animals shortly after collection.

LOCUS TYPICUS : Colombia (caribbean coast), Cartagena-Crespo, shells in beach drift, live specimens in 2-3 m depth.

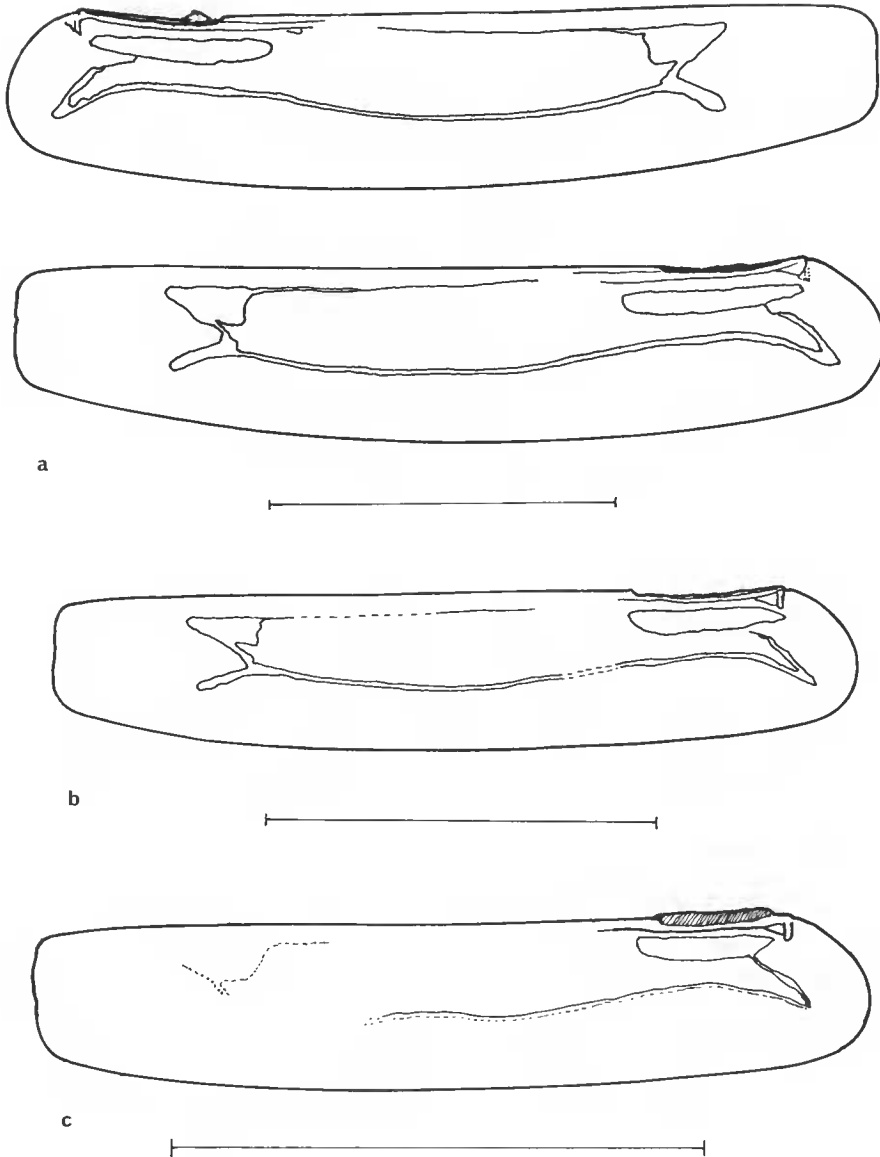


FIG. 1. — *Solen tairona* n. sp. : a, holotype MNHN Paris, Cartagena-Crespo, Colombia, on beach, leg. v. COSEL, 1.VIII.1971 ; b, paratype MNHN Paris, Cartagena-Crespo, Colombia, on beach, leg. v. COSEL, 1.VIII.1971 ; c, paratype MNHN Paris, Cartagena-Crespo, Colombia, fine sand, 2-3 m, leg. v. COSEL, 1.VIII.1971. (Scales : 1 cm.)

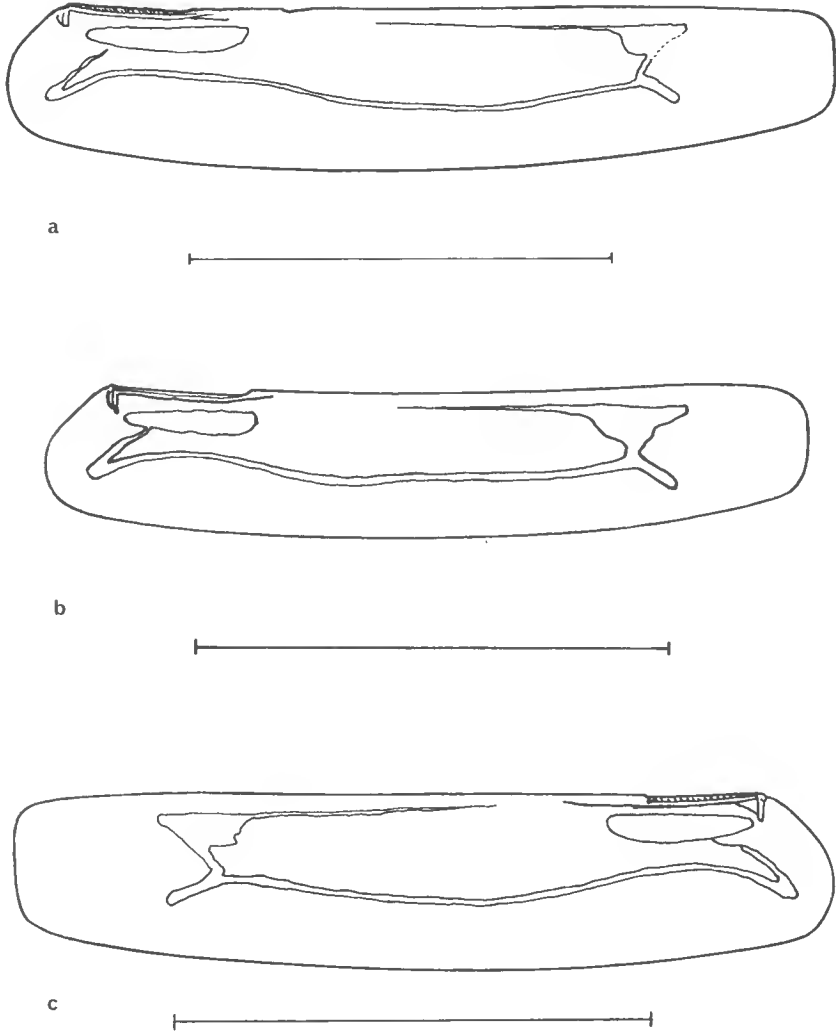


FIG. 2. — a) *Solen tairona* n. sp. : a, paratype LACM Los Angeles, Cartagena-Crespo, Colombia, on beach, leg. v. COSEL, 1.VIII.1971 ; b, c, Cartagena-Crespo, Colombia, on beach, leg. v. COSEL ; 1.VIII.1971, author's collection. (Scales : 1 cm.)

BIOTOPE : Fine light greyish brown mineral sand containing detritus and with ripplemarks caused by the near surf, in 2-3 metres and perhaps also deeper. During collection the surf was not very strong, but slight water movements occurred at depths inhabited by the species. Living specimens were dredged by pushing a strong fine-mesh hand net through the upper 6-10 cm of the sediment while diving.

DISTRIBUTION : Caribbean coast of Colombia. To date only known from the type locality and by a few fragments from the region off the Aeropuerto "Simon Bolivar" of Santa Marta.

DERIVATIO NOMINIS : The species is named after the Tairona Indians, who lived along the central part of the Colombian caribbean coast before colonization.

DISCUSSION

Solen tairona n. sp. is most closely related to the Eastern Pacific *S. rosaceus* Carpenter, 1864 (Southern California and the Gulf of California to Mazatlan), and the Western Atlantic *S. viridis* Say, 1821 (Rhode Island to Texas), with which it forms a species group. Younger specimens especially of *S. viridis* and *S. rosaceus* may differ only slightly from the new species. Apart from colour and periostracum differences the constant distinguishing features are : for *S. viridis* : the larger size (up to 51,5 mm, largest specimen examined), the more rounded posterior end and the fact that the most prominent point of the slightly

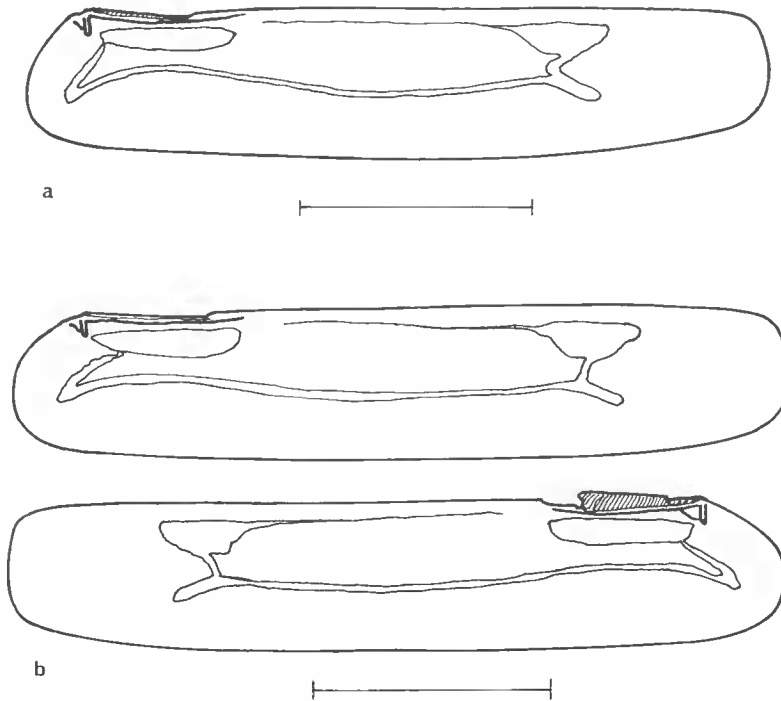


FIG. 3. — a, b, *Solen rosaceus* Carpenter, Terminal Island, Los Angeles, California, leg. W. H. Eshnaur, 28.VII.1929, MNHN Paris. (Scales : 1 cm.)

less rounded anterior end lies more ventral than in *S. tairona* (fig. 4) ; for *S. rosaceus* : the larger size (up to 75 mm (MCLEAN, 1969 : 88), largest specimen examined : 69 mm), the more rounded posterior end and the less tapering posterior half.

In contrast to the uniform brownish rose colour and the nearly transparent periostracum of *S. tairona*, *S. viridis* is translucent white, with pale yellowish green periostracum. Only two specimens from the U. S. Gulf coast had additional rosy or pale-pinkish growth lines out of a total of 46 specimens from 7 museums (from localities between Rhode Island and Texas) studied.

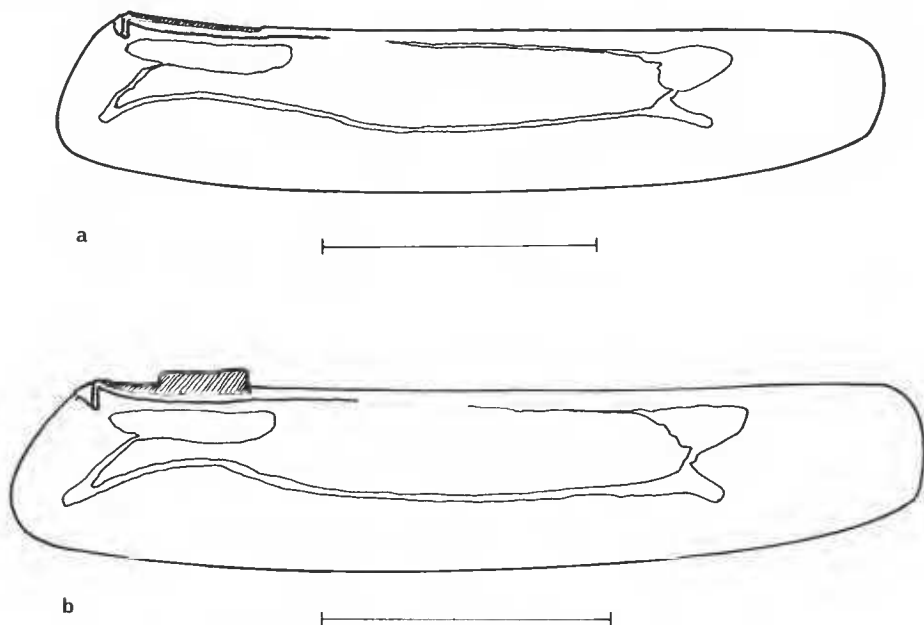


FIG. 4. — *Solen viridis* Say : a, Sullivan Island, South Carolina, coll. DAUTZENBERG. IRSNB Bruxelles ; b, St. Luis Pass, point west of bridge, Galveston Island, Texas, leg. C. BOONE, 12.XI.1968, USNM 807812. (Scales : 1 cm.)

The species or species group actually known under the name *S. rosaceus* shows considerable variation. Most specimens from the Los Angeles area have almost the same rounded anterior shell margin as in *S. tairona*. In other specimens, mostly from the San Diego area and some localities in the northern part of the Gulf of California, the anterior margin is more obliquely truncate and the posterior end is markedly rounded (see illustrations in ABBOTT (1974 : fig. 5634), MORRIS (1966 : pl. 23, fig. 2) and MCLEAN (1969 : fig. 52, no. 3)). In total, 150 specimens from 8 museums (from localities between Los Angeles, California and Mazatlan, Mexico) were examined.

S. aldridgei Usticke, 1969, of which only one valve collected in Antigua (holotype AMNH, New York) could be examined, is longer and narrower (length-width ratio 6 : 1), with less rounded anterior end, nearly parallel dorsal and ventral margins and a thicker periostracum (see figure in USTICKE, 1969).

The sympatric species *S. rosewateri* Altona, 1971, is considerably shorter and broader (length-width ratio 4 : 1 — 4,2 : 1), with a straight to slightly convex dorsal margin and a slightly convex ventral margin, an obliquely rounded-truncated anterior and a bluntly truncated posterior end. Its anterior adductor scar is markedly shorter and broader than in *S. tairona*. Besides the Colombian material (COSEL, *in press*), the type material from Surinam was examined.

An apparently still unnamed species from Brazil (Santos — Rio de Janeiro), which will be described in the forthcoming revision, and of which 15 specimens from 7 museums were studied, is larger (up to 81 mm), has a more truncated anterior end, a more rounded posterior end, a less tapering posterior third, rosy colour with pinkish growth zones and a strong yellowish-brown periostracum. The distance between the inner part of the pallial sinus and the posterior margin of the shell in comparison to the total shell length is considerably larger than in *S. tairona*.

The still more southern *S. thuelcha* Hanley, 1842 (Rio Grande do Sul, Brazil, to Northern Patagonia), differs markedly by its larger size (largest examined specimen 69 mm), white colour and broader, nearly straight shell with rounded truncated ends and a light greenish periostracum.

The new species belongs to a group of *Solen* with the posterior and anterior shell margins more or less rounded or with rounded corners. The posterior part of the valves is more or less tapering, and the dorsal and ventral margins are not strictly parallel as in many other species of *Solen*. Usually the ventral margin is more or less curved convexly, the dorsal margin straight, slightly curved convexly or concavely. There is no pronounced furrow parallel to the anterior margin, only sometimes a very shallow depression. This group has been separated as subgenus *Ensisolen* by HABE (1974 : 228), with type species *S. krusensterni* Schrenck, 1867 (Sakhalin and Korea to Honshu, Japan), and it has its distribution centre in the Western Hemisphere, with only a few known species in the Indopacific.

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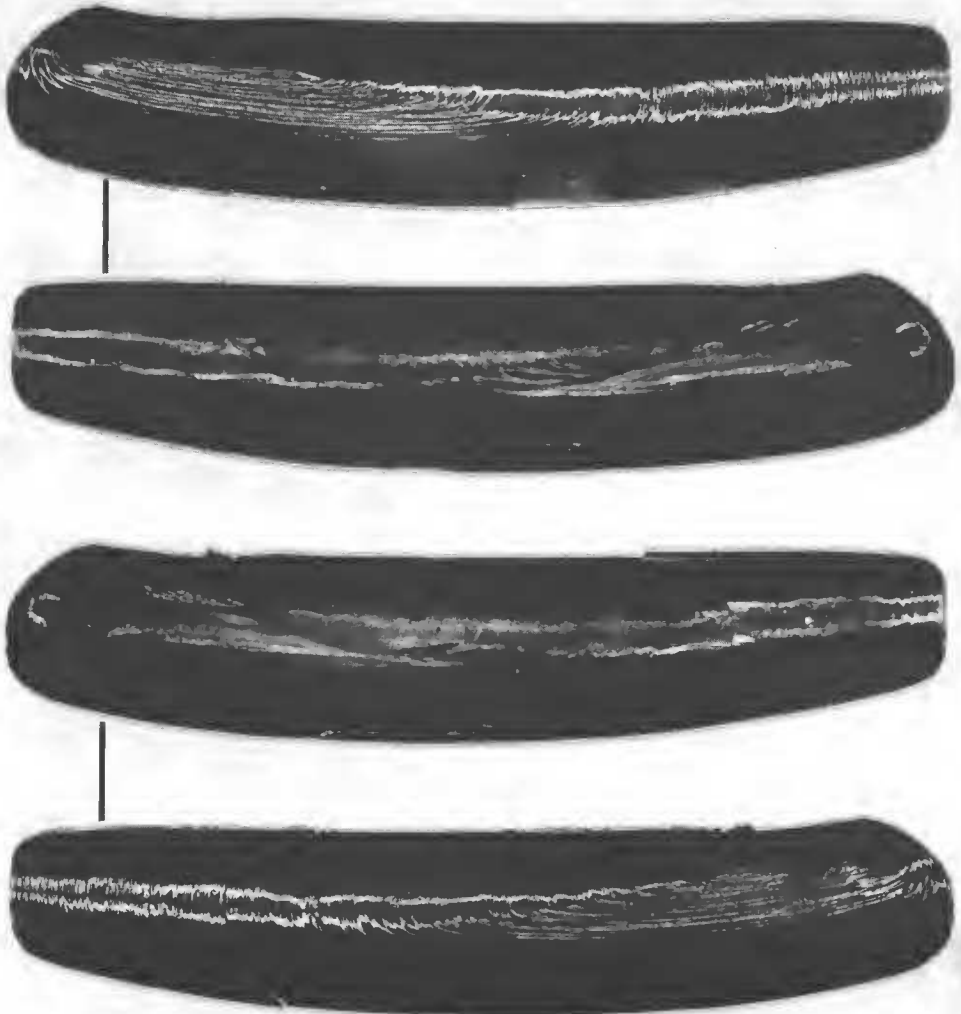


PLATE I. — *Solen tairona* n. sp., holotype MNHN Paris, Cartagena-Crespo, Colombia, South America, on beach, leg. v. COSEL, 1.VIII.1971. ($\times 5$)

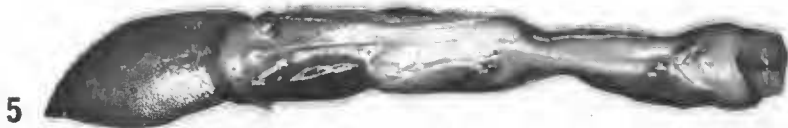
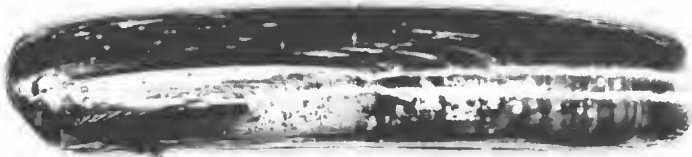
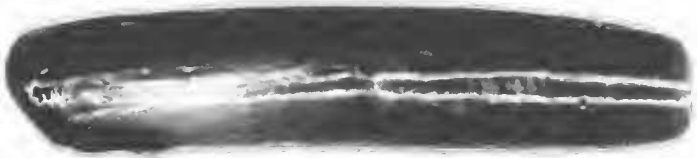
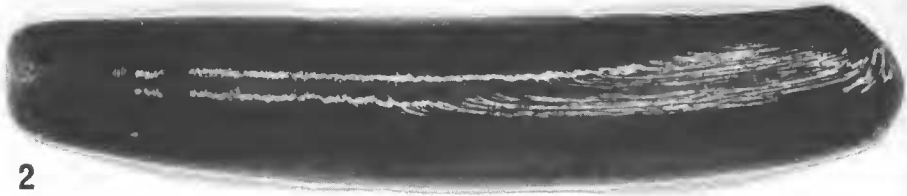
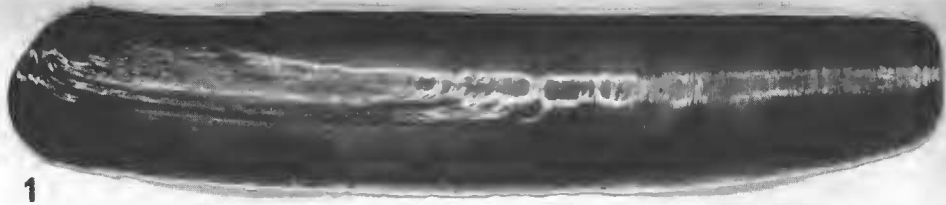


PLATE II. — *Solen tairona* n. sp., Cartagena-Crespo, Colombia, South America, 1.VIII.1971 : 1, paratype MNHN Paris, beach shell ; 2, paratype LACM Los Angeles, beach shell ; 3, specimen from the author's collection, beach shell ; 4, paratype MNHN Paris, live-collected ; 5, animal, removed from the shell. (All $\times 5$)